Appendix A

LEXSEE 427 F.2D 1394

IN RE SUNE BERGSTROM AND JAN SJOVALL

No. 8256

United States Court of Customs and Patent Appeals

57 C.C.P.A. 1240; 427 F.2d 1394; 1970 CCPA LEXIS 320; 166 U.S.P.Q. (BNA) 256

Oral argument January 9, 1970

July 16, 1970

PRIOR HISTORY: [***1]

Appeal from Patent Office, Serial No. 203,752

DISPOSITION:

Reversed.

COUNSEL:

Earl C. Spaeth, attorney of record, for appellants. *Eugene O. Retter, George T. Johannesen, Sidney W. Russell,* of counsel.

Joseph Schimmel for the Commissioner of Patents. *Fred W. Sherling,* of counsel.

OPINION BY:

ALMOND

OPINION: [**1394]

[*1241] Before RICH, ALMOND, BALDWIN, LANE, Associate Judges, and MCMANUS, [**1395] Judge, sitting by designation

ALMOND, Judge, delivered the opinion of the court:

This appeal is from the decision of the Patent Office Board of Appeals affirming the examiner's rejection of claims 23 and 53 in appellants' application n1 for "PGE Type Compounds" "as lacking in novelty under *35 U.S.C. 101.*"

n1 Serial No. 203,752, filed June 20, 1962 as a continuation-in-part of serial Nos. 738,514 filed May 28, 1958, and 199,209 filed Apr. 9, 1962.

The invention relates to two chemical compounds, as reflected in the claims:

23. 7-[3-hydroxy-2-(3-hydroxy-1-octenyl)-5-oxocyclopentyl]-5-heptenoic acid, said acid being sufficiently pure to give a said acid being sufficiently pure to give a substantially ideal curve on partition chromatography using an ethylene [***2] chloride: heptane: acetic acid: water (15:15:6:4) solvent system.

53. A composition of matter consisting essentially of 7-[3-hydroxy-2-(3-hydroxy-1,5-octadienyl)-5-oxocyclopentyl]-5-heptenoic acid.

[*1242] Both compounds, termed PGE(2) and PGE(3), respectively, are members of a family of compounds known collectively as prostaglandins. According to the specification, both are useful in stimulating smooth muscle and in lowering blood pressure.

Some background information will be helpful in understanding the issues raised by the decisions below.

It appears from the record that scientists have known for many years that certain secretions and extracts obtained from human and animal male accessory genital glands possessed the pharmacodynamic effects of lowering blood pressure and stimulating smooth muscle. One Kurzrok, for example, observed in 1930 that human seminal plasma augmented or decreased tone and spontaneous movements in isolated strips of human uterus. A few years later, Goldblatt and von Euler observed that human seminal fluid, human prostate secretions, and secretions of the vesicular gland of sheep produced hypotensive activity and stimulated the smooth [***3] muscle in isolated rabbit's intestine. Von Euler also examined extracts of prostate gland and sheep vesicular gland (obtained by subjecting the organ to alcohol extraction, concentrating the extract by evaporation of alcohol and eliminating lipoids, as required, by a further ether extraction) and found similar pharmacodynamic activity. As von Euler then noted, "[the] attempt to identify the active substance with known substances has thus far been unsuccessful," although he thought that "to all appearances the substance is an independent basic compound." Shortly thereafter, von Euler appears to have determined that the "active principle" in the above secretions and extracts "had acidic character," and he named it "prostaglandin." He was able to free it from associated material "to a certain extent" to obtain "semi-purified extracts," having found that,

after extraction with ethanol and evaporation of the ethanol, prostaglandin could be taken up in ether from an acid solution and subsequently extracted with alkaline water.

In the late 1950's appellants Bergstrom and Sjovall isolated two distinct chemical compounds in essentially pure crystalline form "from crude materials, such [***4] as von Euler prostaglandin, or directly from accessory genital materials such as prostate glands and sperm." Their discovery of those compounds, which were originally known as PGE and PGF (now PGE(1) and PGF(1)), is described in their earlier application serial No. 738,514, now patent No. 3,069,322, issued Dec. 18, 1962, and the two pure compounds form the subject matter of some of

the claims of that patent. Both compounds were found to have a smooth muscle stimulating effect, but only PGE has hypotensive activity. As [*1243] described in similar language both in the patent and in the present application:

These compounds [PGE(1) and PGF(1)] are associated in the source materials [**1396] and in crude extracts thereof with antigens and pyrogens, for example, tissue fragments, lipids, cellular debris, foreign proteins, and the like, and are not useful for parenteral applications. The isolation of these compounds free of antigens and pyrogens made it possible to utilize their pharmacodynamic effects without undesirable side effects or reactions. n2

n2 The present specification goes on to say:

> They [compounds including PGE(2) and PGE(3)] can be extracted from a variety of naturally occurring animal material particularly those rich in lipids, such as, lung, liver, kidney, duodenum, bone marrow, spinal cord, fish meal, and chicken offal, as well as from sperm and prostate, obtained from a variety of animals such as fish, birds, and mammals, for example, chickens, pigs, sheep, cattle, and man. While previous workers have obtained biologically active materials from some of these natural sources, they have not heretofore succeeded in isolating such materials in essentially pure form free of pyrogens and antigens associated with tissue fragments or cell debris, lipids, foreign protein and the like. Consequently such materials have not been suitable for repeated parenteral administration.

[***5]

To isolate PGE(1) and PGF(1), it appears from the Bergstrom et al. patent and the present application that appellants first prepared a crude extract containing PGE(1) and PGF(1) by subjecting sheep prostate gland to alternate alcohol, ether and alkaline phosphate buffer extractions somewhat in the manner of von Euler. A solid residue obtained upon drying a final ether extraction was then given a preliminary purification by subjecting it to a "five stage countercurrent distribution" between ether and phosphate buffer, and the resultant ether and buffer phases were dried. Certain of the dried ether and buffer phases were then pooled and subjected to two different "reversed phase partition chromatography" procedures employing two different solvent systems. Certain fractions of the eluate obtained from that purification procedure yielded crystal of essentially pure PGE(1) and PGF(1).

In 1960, appellants also published a description of their work relating to the isolation of PGE(1) and PGF(1) in Acta Chemica Scandinavica, 14, 1693-1705 (1960). The procedure with respect to the isolation of PGE(1) was described thus:

We have described the isolation of prostaglandin F from vacuum [***6] dried sheep prostate glands in the preceding paper * * *.

In that work it was noticed that a more lipid soluble factor was sometimes present which showed activity both on intestinal strips and on rabbit blood pressure. It has been found that this fraction is responsible for most of the activity of the fresh or frozen glands.

The isolation of this factor, prostaglanding E (PGE) in crystalline form, will be described in this paper.

* * *

Extraction procedure. The frozen glands were minced in a meat grinder. After addition of 4 liters of 95% ethanol per kg, the suspension was stirred mechanically [*1244] for 1 hour and then left to sediment overnight. The extract was separated and concentrated * * *. The crude concentrate was then extracted into ether and transferred into phosphate buffer * * *.

Partition chromatography. In this work, we left out the counter-current distribution procedure for the preliminary purification of the crude extract. Instead, this extract was directly subjected to reversed-phase chromatography with 50% methanol/water as moving phase and 50% isooctanol/chloroform as stationary phase, supported on Hostalen (Hoechst). In most cases the extract [***7] from 12.5 kg of prostate glands weighed 5-7 g and this material was put on a column with 67 ml of stationary phase on 100 g of Hostalen. The result of such a chromatography is shown in Fig. 1. The peak of physiological activity appeared at about 1.5 [**1397] 1 effluent. * * * A 10 to 30-fold purification of the active material was obtained with the reversed phase chromatography.

The material obtained was found to lower rabbit blood pressure. This effect is not obtained with previously isolated PGF. It was found, however, that PGE, although being eluted somewhat later than PGF, was not separated from this compound. Therefore, a second reversed-phase chromatography was run using 35% (v/v) methanol/water saturated with 1/10 of its volume of 40% (v/v) isoamyl acetate/chloroform as moving phase. The hydrophobic phase was used as stationary phase, 4 ml being supported on each 4.5 g of silane treated kieselguhr. With this system, PGF is eluted just after the front, separated from PGE which is eluted at about 50 ml effluent from a 4.5 g column. * * * an approximate 4-fold purification was obtained.

* * *

Crystallization of prostaglandin E. The fractions from the second reversed [***8] phase chromatography, containing the last half of the active band, were combined as also were those containing the first half. After evaporation to dryness in vacuo, the residues were dissolved in a few ml of ethyl acetate and allowed to stand overnight at room temperature. Needle-shaped crystals were usually obtained from the material contained in the last half of the active band * * *.

In Examples 4 and 5 of the present application, appellants describe a procedure for separate isolation of PGE(2) and PGE(3) in addition to PGE(1) which closely resembles the process described in their 1960 publication up to the point where the second reversed-phase chromatography run was begun. Thereupon, appellants changed their procedure and subjected the pooled effluent fractions from the first chromatography run to a different chromatographic process. They obtained three separate fractions having physiological activity from which pure PGE(1), PGE(2), and PGE(3) were individually isolated.

Faced with that set of facts, the examiner rejected claims 23 and 53 under § 101. Inasmuch as the "claimed compounds are naturally occurring," said the examiner, they therefore "are not 'new' within [***9] the connotation of the patent statute," citing *Ex parte Snell, 86 USPQ 496 (1950).* In support of her rejection, and in contrast to appellants' contention that both claims are directed not to naturally occurring materials but to pure compounds which do not exist in pure form in

nature, the examiner noted that she could not "determine from the [*1245] claims exactly what is included or excluded." She thought the language of both claims sufficiently broad to embrace and not distinguish from either (1) the mother liquors which apparently inherently contain PGE(2) and PGE(3) and from which PGE(1) is crystallized, as described in the 1960 Bergstrom et al. publication, or (2) those compounds as they inherently occur in previously known crude extracts or even in nature. In view of that, and because the smooth muscle-stimulating, blood pressure-depressing functions of something - an unidentified active material - in the sheep prostate glands and crude extracts thereof (from which appellants isolated PGE and other active components) was known by von Euler and others in the art prior to appellants' isolation of them and discovery of precisely what they were, the examiner felt that "[merely] [***10] determining the structure of the active components of Von Euler's 'Prostaglandin' does not make the claimed products new." [Emphasis supplied.]

The board approached the issue in quite a different manner. At the outset, we observe that it apparently disagreed with the examiner's interpretation of the claims and agreed with appellants that their claims are directed to pure chemical compounds, variously referring in its opinion to "the claimed pure materials," [**1398] "the claimed pure compounds," and "the pure products claimed." After summarizing n3 its understanding of the examiner's rejection, the board noted that appellants had not denied that PGE(2) and PGE(3) were in fact inherently present in the glandular material, extracts and liquors described in the Bergstrom publication. Indeed, when it compared the procedure described in Examples 4 and 5 of appellants' specification for obtaining a product from the first partition chromatography with that described in the Bergstrom reference, heretofore quoted under the heading "Partition chromatography," it found "a striking similarity of procedure up to that point" [emphasis supplied]. "Accordingly," said the board, "if appellants' [***11] material with a 'peak of physiological activity ... at about 1500 ml.' contains PGE(2) and PGE(3), then the corresponding material of the reference with a 'peak of physiological activity ... at about 1.5 l.' must likewise contain PGE(2) and PGE(3)."

n3 The board stated:

> Claims 23 and 53 have been rejected as lacking in novelty under *35 U.S.C. 101* by virtue of the presence of PEG(2) and PGE(3) in natural glandular material or in various fractions and liquors derived from the glandular material. The Examiner cites appellants' 1960 publication for materials which inherently contain PGE(2) and PGE(3).

Having firmly established inherency to its satisfaction - a "sound and unrefuted basis for holding that PGE(2) and PGE(3) are present in the material obtained from the first partition chromatography of the publication" - the board then said:

* * * the issue remaining to be decided is whether the claimed pure materials [*1246] are novel as compared with less pure materials of the reference. Here we must consider the various decisions cited by appellants and the Examiner, most of which were reviewed by us in the case of *Ex parte Reed et al., 135 USPQ 34* (on reconsideration, [***12] *135 USPQ 105).* The consistent principle, and the one which we follow, is that a claim to a purified material cannot be allowed unless the purified material exhibits properties and utilities not possessed by the unpurified material. [Emphasis supplied.]

On review of that matter, the board found no new properties for the pure materials claimed that the impure materials of the reference do not also have - namely, both stimulate smooth muscle and lower blood pressure - and affirmed the examiner's rejection.

Appellants petitioned the board for reconsideration, voicing objection to the manner in which the board had used their own specification to establish both inherency of the presence of PGE(2) and PGE(3) in the materials of the Bergstrom publication, and the subsequent asserted anticipatory effect of that reference. They argued:

But appellants again insist that there is no evidence whatever in the Bergstrom et al. article or elsewhere in the Patent Office record of this appealed application that the art knew or should have known that PGE(2) and PGE(3) could be isolated in pure form from the same animal tissues from which PGE(1) had been isolated. This is a point which has [***13] been presented again and again to the Patent Office in writing and orally. Nowhere in the record has the Patent Office discussed or even acknowledged this point.

The board responded:

The issue involved in the Examiner's rejection under *35 U.S.C. 101* is the inherent presence of PGE(2) and PEG(3) in the material of the reference. Neither the Examiner nor we have held that the publication explicitly spells out the presence of these two substances. On the question of the inherent existence of PGE(2) and PGE(3), any evidence may be used, pro or con, and appellants are free to prove the [**1399] negative, just as we used circumstantial evidence to demonstrate the affirmative in * * * our decision. [Emphasis supplied.]

A preliminary question has arisen concerning the status of the 1960 Bergstrom et al., publication as "prior art" in the case. Both the examiner and board cited it as a "reference," presumably to serve as an evidentiary basis n4 for their rejection of the claimed subject matter as not "new" or as "lacking in novelty." The only statutory basis stated by them for so employing it was not *35 USC 102* but *35 USC 101.* n5 The [*1247] situation thus presented to [***14] us is rather unique, the only comparable one in recent years that comes to mind being *In re Seaborg, 51 CCPA 1109, 328 F.2d 996, 140 USPQ 662 (1964),* where a reference was used by the Patent Office to support a rejection under § 101 on the basis that the subject matter claimed, though not described, nevertheless was inherently present in material produced by the reference process and therefore was not new. The solicitor seeks to explain the position taken below this way:

> n4 As we recently pointed out in *In re Land, 54 CCPA 806, 368 F.2d 866. 151 USPQ 621 (1969),* quoting from *In re Hilmer, 53 CCPA 1288, 359 F.2d 859, 149 USPQ 480 (1966):*
>
> Much confused thinking could be avoided by realizing that rejections are based on statutory provisions, not on references, and that the references merely supply the evidence of lack of novelty, obviousness, loss of right or whatever may be the ground of rejection.
>
> n5 Section 101 reads:
>
> § 101. Inventions patentable

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
>
> Section 102 reads in pertinent part:
>
> § 102. Conditions for patentability; novelty and loss of right to patent
>
> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or
>
> (b) the invention was patented, or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States * * *.

[***15]

With regard to the prior art, it should be noted that neither the examiner nor the Board relied upon the Bergstrom et al. article or any other reference under S102. In fact, appellants appear to have the benefit of the filing date of their 1958 application as to the subject matter of their 1960 publication which is also disclosed by the 1958 application. However, the examiner and Board did rely upon the 1960 publication as evidence of the prior art in accordance with the Court's holding in *In re Wilson, 50 CCPA 773, [311 F.2d 266], 135 USPQ 442.*

[1] We note, however, that neither the examiner nor the board relied on the case cited by the solicitor in support of his hypothesis, or the exceptional circumstances illustrated therein, to explain or justify their use of the Bergstrom publication here. In any event, it should also be observed that the subject matter of the present claims is not "disclosed in the manner provided by the first paragraph of section 112" in appellants' 1958 parent application, *35 USC 120.* Inasmuch as the Bergstrom article appears to have been published more than one year prior to the date of any application by appellants which does describe the subject [***16] matter of the present claims, it is eligible as a timewise statutory bar under *35 USC 102*(b), if indeed the present invention was "described" in or rendered obvious n6 by that [**1400] publication. To that matter we now turn.

> n6 See, for example, *In re Foster, 52 CCPA 1808, 343 F.2d 980, 145 USPQ 166 (1965),* cert. denied *383 U.S. 966; In re Hassler, 52 CCPA 1546, 347 F.2d 911, 146 USPQ 167 (1965); In re Ruscetta, 45 CCPA 968, 255 F.2d 687, 118 USPQ 101 (1958).* As is evident from the decisions below, appellants and the solicitor are on sound ground in agreeing that:
>
> * * * obviousness of the claimed pure compounds is not an issue here since there is no rejection under *35 U.S.C. 103.*

[*1248] Appellants argue that the subject matter of the claims - pure PGE(2) and pure PGE(3) - is "new." n7 Tested by the conventional evidentiary criteria or "conditions for patentability" relevant to the present factual situation which Congress has expressed in the

various provisions of *35 USC 102,* appellants are undoubtedly correct, for the Patent Office has not been able to cite - or supply evidence under - any of those statutory provisions to establish that the claimed subject matter [***17] lacks "novelty." Indeed, the board concedes that "[neither] the Examiner nor we have held that the [Bergstrom] publication explicitly spells out the presence of these two substances," making it apparent that the claimed pure compounds were not "described in a printed publication in * * * a foreign country" more than one year prior to the filing date of appellants' present application. As far as the record shows, then, the claimed subject matter is described and made known to the public for the first time only in the present application.

> n7 Appellants also insist that the Patent Office has not established that those in the art were even in possession of impure PGE(2) and impure PGE(3), and consequently that those substances too are new. To a certain extent, we suppose, their contention has some merit, but primarily for the reason that appellants were evidently the first to ascribe the names "PGE(2)" and "PGE(3)" (or the more standard systematic nomenclature reflected in the claims) to what they isolated in pure form either from sheep prostate gland or particularly from von Euler's "semi-purified" prostaglandin. Moreover, appellants say, the art knew nothing of the existence of PGE(2) and PGE(3) prior to their isolation of them, and the skilled worker would attribute all the activity of the known secretions and extracts, such as von Euler's prostaglandin, to the presence of PGE(1).
>
> On the other hand, the examiner pointed out that the art knew full well that something in impure form existed in von Euler's prostaglandin which possessed smooth muscle-stimulating, blood pressure-lowering activity. She apparently thought that claiming that something in terms of a newly discovered formula or structure in a manner sufficiently broad to dominate it wherever and however found, including the impure form in the known semi-purified extracts of von Euler, would not make that claimed subject matter new because workers in the art in fact already had possession of it as claimed that broadly, albeit they did not know precisely what its structure was and had not given it the name appellants have given it. See *In re King, 27 CCPA 754, 107 F.2d 618, 43 USPQ 400 (1939).* The examiner's position seems to have been, in other words, that "a rose by any other name would smell as sweet."
>
> We need not further discuss the merits of appellants' argument, or the examiner's position as reiterated by the solicitor here, in light of appellants' agreement with the board's finding that the claims are directed to pure, rather than impure, PGE(2) and PGE(3).

[***18]

The question remains whether there is some other, perhaps extrastatutory criteria standing apart from § 102 for determining whether given subject matter is "new" in the sense Congress has utilized that term in § 101 or, to put it another way, whether the Bergstrom publication can be used as evidence to support a rejection under § 101 in a manner different and apart from what would have been its normal use to support a rejection under § 102, had it in fact described the claimed subject matter. The board and solicitor seem to have taken an affirmative view on those matters, but for rather different reasons. The solicitor says:

The only reasonable conclusion from the evidence of record is that the compounds claimed by appellants are present in some form in the prior art extracts. [*1249] Appellants argue that such a fact has no legal significance because not even the impure compounds were known to exist and to be in possession [**1401] of the public * * *. However, prior knowledge is a requirement of S102, but there is no requirement that a naturally occurring compound must be known or in possession of the public to negate novelty under S101. Certainly, an unknown [***19] compound or composition of materials merely discovered from nature is not patentable. *Funk v. Kalo, 333 U.S. 127, 76 USPQ 280.*

The solicitor's position seems to hark back to the examiner's view, heretofore summarized, that the present compounds, as claimed, are "naturally occurring" and therefore not "new." At the outset we would observe that what appellants claim - pure PGE(2) and pure PGE(3) - is not "naturally occurring." Those compounds, as far as the record establishes, do not exist in nature in pure form, and appellants have neither merely discovered, nor claimed sufficiently broadly to encompass, what has previously existed in fact in nature's storehouse, albeit unknown, or what has previously been known to exist.

[2] But quite apart from those considerations, the criteria for determining whether given subject matter is "new" within the meaning of § 101 are no different than the criteria for determining whether that subject matter possesses the "novelty" expressed in the title of § 102. The word "new" in § 101 is defined and is to be construed in accordance with the provisions of § 102. n8 Thus, that which possesses statutory novelty under the provisions of § 102 [***20] is also new within the intendment of § 101. We have found no evidence of Congressional intent to define the word "new" as used in § 101 in any different manner.

n8 That such is the case is clear, we think, from House Report No. 1923 and Senate Report No. 1979, 82d Congress, 2d Session, accompanying H.R. 7794 which became the 1952 Patent Act. Both reports state in identical language:

Section 101 sets forth the subject matter that can be patented, "subject to the conditions and requirements of this title." The conditions under which a patent may be obtained follow, and section 102 covers the conditions relating to novelty.

* * *

Section 102 in paragraphs (a), (b) and (c) repeats the conditions in the existing law relating to novelty.

* * *

Section 102, in general, may be said to describe the statutory novelty required for patentability, and includes, in effect, an amplification and definition of "new" in section 101. [Emphasis supplied.]

The revision notes to section 101 state:

The corresponding section of existing statute [RS 4886] is split into two sections, section 101 relating to the subject matter for which patents may be obtained, and section

102 defining statutory novelty and stating other conditions for patentability. [Emphasis supplied.]

[***21]

Failing to find pure PGE(2) and PGE(3) described in the Bergstrom publication, the board in turn seems to have premised its decision on the inherency of an impure form of PGE(2) and PGE(3) in products resulting from certain procedures that are described in that reference. Appellants argue here, and below, that the board improperly used [*1250] their own application as "circumstantial evidence" of that fact. It is appellants' view that the fact of inherency was hidden from the world until they discovered it, and disclosed it in the present application. We need not decide the merits of that matter, n9 for the fundamental error in the board's position, as we see it, is the analysis and answer it gave to the sole issue it accurately posed - "whether the claimed pure materials are novel as compared with the less pure materials of the reference." [Emphasis supplied.] It seems to us that the answer to that question is self-evident: [3] by definition, n10 [**1402] pure materials necessarily differ from less pure or impure materials and, if the latter are the only ones existing and available as a standard of reference, as seems to be the situation here, perforce the "pure" [***22] materials are "new" with respect to them. As this court stated in *In re Williams, 36 CCPA 756, 171 F.2d 319, 80 USPQ 150 (1948):*

n9 But see *In re Naylor, 54 CCPA 902, 369 F.2d 765, 152 USPQ 106; In re Seaborg, supra.*

n10 Webster's New International Dictionary, 2nd Edition, 1954 defines "pure" as "Separate from all heterogeneous or extraneous matter; free from mixture or combination * * *. "Impure" is defined as "not pure; specif: * * * b. mixed or impregnated with something extraneous * * *.

In support of the rejection on the ground of lack of novelty, the examiner and the board point out that the compound of the Monatschefte publications is a racemic mixture and, therefore, necessarily contains both dextro rotary and laevo rotary components. It is the position of the Patent Office tribunals that, in view of that fact, the laevo rotary compound, having existed as part of the recemic mixture, cannot be novel. The appealed claim, however, calls for the laevo rotary form "substantially free from the dextro rotary form" and it is evident that the laevo rotary form did not exist in this condition in the mixture of the Monatschefte publications. The existence of a compound [***23] as an ingredient of another substance does not negative novelty in a claim to the pure compound, although it may, of course, render the claim unpatentable for lack of invention [now obviousness, § 103]. [Emphasis supplied.]

Moreover, whether the claimed pure materials have the same usefulness or assortment of properties as the impure materials of the prior art, as the board here found, is a question having no bearing on the factual and legal matter whether pure materials are new vis-a-vis impure materials within the meaning of § 101, although it is but one of the factors to be considered in determining their obviousness under *35 USC 103. In re Cofer, 53 CCPA 830, 354 F.2d 664, 148 USPQ 268 (1966).* As we observed earlier, no rejection under § 103 appears to be presented, and it thus becomes unnecessary to consider the cases discussed in Cofer and in Ex parte Reed, cited by the board, supra.

We conclude that the subject matter claimed by appellants is "new."

The decision is reversed.

> "Hoffmann's recrystalized product is therapeutically different from the Kraut and antecedent products in the following undisputed particulars: It was long known that salicylic acid was the best remedy for rheumatism, ... [but] when taken internally in a free state it was injurious to the stomach of all patients ... . In the Hoffmann product all the salicylic acid is held entirely in bond while passing through the stomach, where it would do harm, and is set free in the intestines where its utility as a therapeutical agent is rendered effectual ... . [I]t makes no difference, so far as patentability is concerned, that the medicine thus produced is lifted out of a mass that contained, chemically, the compound; for, though the difference between Hoffmann and Kraut be one of purification only--strictly marking the line, however, where the one is therapeutically available and the others were therapeutically unavailable--patentability would follow."n387

One year after the aspirin case, Judge Learned Hand decided a similar case, *Parke-Davis & Co. v. H.K. Mulford & Co.* (1911) ,n388 involving a patent on an adrenalin compound derived from the suprarenal glands of certain animals.n389 It had been previously known that suprarenal gland in powdered form had "hemostatic, blood pressure raising and astringent properties" but could not be used for those purposes in its gross form. The patentee Takamine produced a substance possessing the desired characteristics in pure and stable form. Judge Hand framed the issue as whether the new compound differed from the natural one in kind or merely in degree.

> "[E]ven if it were merely an extracted product without change, there is no rule that such products are not patentable. Takamine was the first to make it available for any use by removing it from the other gland-tissue in which it was found, and, while it is of course possible logically to call this a purification of the principle, it became for every practical purpose a new thing commercially and therapeutically. ... Everyone, not already saturated with scholastic distinctions, would recognize that Takamin's crystals were not merely the old dried glands in a purer state, nor would his opinion change if he learned that the crystals were obtained from the glands by a process of eliminating the inactive organic substances. The line between different substances and degrees of the same substance is to be drawn rather from the common usages of men than from nice considerations of dialectic."n390

Thus, the aspirin exception to the purity rule comes into play only if the new pure compound differs "in kind" rather than merely "in degree" from the old compound. A difference"in kind" will normally be found only if the new pure compound has an entirely new utility from the old one.n391

A line of cases in the Court of Customs and Patent Appeals adopted a fundamentally different approach to the purity problem.n392 The new approach rejects the focus of the older cases upon whether a more pure compound is sufficiently different in kind to constitute a "new and useful ... manufacture, or composition of matter" within the meaning of Section 101. The compound in question is generally such as to come within the normal definitions of "manufacture" and "composition of matter." "New" in Section 101 is equated with the standard of

novelty under Section 102 with the result that a more pure compound literally means the novelty standard of Section 102(a). Therefore, the patentability of a more pure compound turns on whether it meets the obviousness standard of Section 103.n393 In *In re Cofer* (1966) ,n394 for example, the court discussed the purity cases.

> "We think examination of the decisions ... will demonstrate that the materials involved therein were found unpatentable where the alleged difference in form or purity of those substances was either disclosed or inherent in, or rendered obvious by, the prior art of record. ... To be sure, whether a given chemical compound or composition has the same usefulness as closely related materials may be an important consideration in determining obviousness under *35 U.S.C. § 103* . But it is only one consideration ... . [O]ther acts [include] ... whether the prior art suggests the particular structure or form of the compound or composition as well as suitable methods of obtaining that structure of form."n395

To like effect is *In re Bergstrom* (1970) .n396

> "[T]he criteria for determining whether given subject matter is 'new' within the meaning of § 101 are no different than the criteria for determining whether that subject matter possesses the 'novelty' expressed in the title of § 102. The word 'new' in § 101 is defined and is to be construed in accordance with the provision of § 102. ... [B]y definition, pure materials necessarily differ from less pure or impure materials and, if the latter are the only ones existing and available as a standard of reference ... perforce the 'pure' materials are 'new' with respect to them. ... [W]hether the claimed pure materials have the same usefulness or assortment of properties as the impure materials of the prior art ... is a question having no bearing on the factual and legal matter whether the purye materials are new vis-a-vis impure materials within the meaning of § 101, although it is but one of the factors to be considered in determining their obviousness under *35 U.S.C. § 103* ."n397

In *Schering Corp. v. Geneva Pharmaceuticals, Inc.* (2003) ,n398 a patent claimed a metabolite of a known drug (loratadine).n399 A prior art patent disclosed and claimed loratadine and taught that it could be administered to a human patient. The prior art patent did not disclose the later-patented metabolite, but that metabolite would necessarily be produced by the patient. The Federal Circuit held that the patent to the metabolite was invalid because of anticipation by inherency. However, it noted that a "proper" claim to the metabolite in synthetic or purified form would have been patentable.

> "[T]his court's conclusion on inherent anticipation ... does not preclude patent protection for metabolites of known drugs. With proper claiming, patent protection is available for metabolites of known drugs. Cf. *In re Kratz, 592 F.2d 1169, 1174 (CCPA 1979)* (stating that a naturally occurring strawberry constituent compound

does not anticipate claims to the substantially pure compound); *In re Bergstrom, 427 F.2d 1394, 1401-02 (CCPA 1970)* (stating that a material occurring in nature in less pure form does not anticipate claims to the pure material).

"... [B]road compound claims are inherently anticipated by a prior art disclosure of a drug that metabolizes into the claimed compound.

"A skilled patent drafter, however, might fashion a claim to cover the metabolite in a way that avoids anticipation. For example, the metabolite may be claimed in its pure and isolated form, as in *Kratz* and *Bergstrom*. ... "n400

FOOTNOTES

(n382) Footnote 382. *American Wood-Paper Co. v. Fibre Disintegrating Co., 90 U.S. 566, 594 (1874)* .

(n383) Footnote 383. *Risdon Locomotive Works v. Medart, 158 U.S. 68, 81(1895)* ; *In re Michalek, 161 F.2d 253, 73 USPQ 385 (CCPA 1947)* ; *In re Crosley, 159 F.2d 735, 72 USPQ 499 (CCPA 1947)* ; *In re King, 107 F.2d 618, 620, 43 USPQ 400 (CCPA 1939)* ; *In re Macallum, 102 F.2d 614, 41 USPQ 146 (CCPA 1939)* ; *In re Merz, 97 F.2d 599, 38 USPQ 143 (CCPA 1939)* ; *In re Johnston, 94 F.2d 978, 37 USPQ 75 (CCPA 1938)* ; *In re Ridgway, 76 F.2d 602, 25 USPQ 202 (CCPA 1935)* ; *In re McKee, 75 F.2d 636, 24 USPQ 416 (CCPA 1935)* ; *In re Fink, 62 F.2d 103, 16 USPQ 11 (CCPA 1932)* ; *Ex parte Hartop, 139 USPQ 525 (Pat. Off. Bd. App. 1962)* ; *Ex parte Reed, 135 USPQ 34, 105 (Pat. Off. Bd. App. 1961)* ; *Ex parte Snell, 86 USPQ 496 (Pat. Off. Bd. App. 1950)* ; *Ex parte Sparhawk, 64 USPQ 339 (Pat. Off. Bd. App. 1944)* .

See generally Wolk, "Pharmaceutical Patent Practice," *The Encyclopedia of Patent Practice and Invention Management* 622 (Calvert ed. 1964); Note, "Purity as a Basis for Patentability," *20 Geo. Wash. L. Rev. 232 (1952).*

(n384) Footnote 384. *In re Merz, 97 F.2d 599, 601, 38 USPQ 143 (CCPA 1938)* .

(n385) Footnote 385. *Kuehmsted v. Farbenfabriken of Elberfeld, 179 F. 701 (7th Cir. 1910)* .

(n386) Footnote 386. U.S. Pat. No. 644,077.

(n387) Footnote 387. *179 F. at 704-05.*

(n388) Footnote 388. *Parke-Davis & Co. v. H.K. Mulford & Co., 189 F. 95 (S.D. N.Y. 1911), aff'd, 196 F. 496 (2d Cir. 1912)* .

(n389) Footnote 389. U.S. Pat. No. 730,176. See also U.S. Pat. No. 753,177.

(n390) Footnote 390. *189 F. at 103.*

(n391) Footnote 391. E.g., *Merck & Co. v. Olin Mathieson Chem. Corp., 253 F.2d 156, 164, 116 USPQ 484 (4th Cir. 1958)* .

See Note, "Purity as a Basis for Patentability," *20 Geo. Wash. L. Rev. 232, 237-41 (1952).* It has also been suggested that "one of the essential prerequisites to the finding of patentability in the purified compound is novelty in the process employed to produce the product." *Id. at 236;* see *In re Michalek, 161 F.2d 253, 255, 73 USPQ 385 (CCPA 1947)* .

(n392) Footnote 392. *In re Bergstrom, 427 F.2d 1394, 166 USPQ 256 (CCPA 1970)* ; *In re Cofer, 354 F.2d 664, 148 USPQ 268 (CCPA 1966)* ; *In re Seaborg, 328 F.2d 996, 140 USPQ 662 (CCPA 1964)* ; cf. *In re Williams, 171 F.2d 319, 80 USPQ 150 (CCPA 1948)* .

Compare *Ex parte Gray, 10 USPQ2d 1922, 1927* (Bd. Pat. App. & Int'f 1989) , discussed § 5.04[8][d], § 8.05[4] ("the *mere* purity of a compound, in itself, does not render the substance unobvious").

See generally Note, "Products of Nature: The New Criteria," *20 Catholic U. L. Rev. 783 (1971).*

(n393) Footnote 393. See § 5.04[8][d].

(n394) Footnote 394. *In re Cofer, 354 F.2d 664, 148 USPQ 268 (CCPA 1966)* .

(n395) Footnote 395. *354 F.2d at 667-68, 148 USPQ at 271.*

(n396) Footnote 396. *In re Bergstrom, 427 F.2d 1394, 166 USPQ 256 (CCPA 1970)* .

(n397) Footnote 397. *427 F.2d at 1401-02, 166 USPQ at 262.*

See also *In re Kratz, 592 F.2d 1169, 201 USPQ 71 (CCPA 1979)* ; *Amgen, Inc. v. Chugai Pharmaceutical Co., 706 F. Supp. 94, 9 USPQ2d 1833 (D. Mass. 1989)* (patent claiming homogeneous erythropoietin, a blood factor that induces differentiation of cells into red blood cells); *Scripps Clinic & Research Foundation v. Genentech Inc., 666 F. Supp. 1379, 1389 n.6, 3 USPQ2d 1481, 1487 n.6 (N.D. Calif. 1987), on motion for reconsideration, 678 F. Supp. 1429, 6 USPQ2d 1018 (N.D. Calif. 1988) , further opinions, 707 F. Supp. 1547, 11 USPQ2d 1187 (N.D. Calif. 1989), 724 F. Supp. 690, 12 USPQ2d 1157 (N.D. Calif. 1989), aff'd in part, rev'd in part, vacated in part, & remanded, 927 F.2d 1565, 18 USPQ2d 1001, 18 USPQ2d 1896 (Fed. Cir. 1991)* (finding case exceptional for attorney fees purposes); ("Although Factor VIII:C molecules occur in nature, a purified and concentrated preparation of Factor VIII:C as claimed in the patent constitutes a new form or combination not existing in nature, and hence is patentable under *35 U.S.C. § 101* ."); *Ex parte Stern, 13 USPQ2d 1379, 1381* (Bd. Pat. App. & Int'f 1989) (rejecting as *prima facie* obvious a claim to "human interleukin 2 as a homogenous protein" because the prior art suggested the desirability of pure interleukin 2 and a recent reference taught a method of purifying proteins that appeared to be applicable to interleukin 2 but disapproving of the examiner's "sweeping statement" that "the degree of purity alone is not sufficient to warrant a patentably distinct protein": "the examiner's cavalier disposition of the degree of purity expressed in the appealed claim is completely unrealistic and clearly erroneous"); *Ex parte Goeddel, 5 USPQ2d 1449* (Bd. Pat. App. & Int'f 1987) (a claim to synthetic mature human leukocyte interferons prepared by recombinant DNA technology was improperly rejected by the examiner as not "differ[ing] in kind" from natural human leukocyte interferons in view of cited differences between the claimed interferon and the natural interferon and despite the fact that there can be variations in the number of amino acids in natural interferon).

(n398) Footnote 398. *Schering Corp. v. Geneva Pharmaceuticals, Inc., 339 F.3d 1373, 67 USPQ2d 1664 (Fed. Cir. 2003), reh'g and reh'g en banc denied, 348 F.3d 992 (Fed. Cir. 2003)* , discussed § 3.03[2][c].

See also *SmithKline Beecham Corp. v. Apotex Corp., 403 F.3d 1331, 1346 (Fed. Cir. 2005), cert. denied, 126 S. Ct. 2887 (2006)* (citing *Schering*; inherent anticipation may be avoided "through proper claiming").

(n399) Footnote 399. U.S. Pat. No. 4,721,723.

(n400) Footnote 400. *339 F.3d at 1381.*